

CLAIM AMENDMENTS

1 1. (currently amended) A method of making a strained
2 layer on a substrate, the method comprising the steps of:
3 providing on the substrate in a single epitaxial deposit
4 a ~~t-least one~~ first epitaxial relaxing layer and on it a second
5 epitaxial layer to be subjected to strain;
6 generating with ion implantation a defect region in a
7 layer neighboring the second epitaxial layer to be subjected to
8 strain [[,]]; and
9 relaxing a ~~t-least one~~ layer neighboring the second
10 epitaxial layer to strain the second epitaxial layer.

1 2. (previously presented) The method according to claim
2 1 wherein dislocations extend from a defect region which give rise
3 to a relaxation of one of the layers neighboring the layer to be
4 strained.

1 3. (currently amended) The method according to claim 1
2 wherein the [[one]] first epitaxial layer neighboring the second
3 epitaxial layer is subjected to at least one thermal treatment or
4 oxidation for relaxation.

1 4. (previously presented) The method according to claim
2 1 wherein the defect region is produced in the substrate.

1 5. (currently amended) The method according to claim 1
2 wherein at least one ~~[[first]]~~ further epitaxial layer is
3 epitaxially deposited on the layer to be strained.

1 6. (currently amended) The method according to claim 5
2 wherein the ~~[[first]]~~ further epitaxial layer has a different
3 degree of ~~dislocation~~ strain than the second epitaxial layer.

1 7. (currently amended) The method according to claim 5
2 wherein the first epitaxial layer is relaxed.

1 8. (previously presented) The method according to claim
2 1, further comprising the step of
3 depositing a further layer between the layer to be
4 strained and the substrate.

1 9. (currently amended) The method according to claim 8
2 wherein the further layer has a different degree of ~~dislocation~~
3 strain than the layer to be strained.

1 10. (previously presented) The method according to
2 claim 1 wherein a plurality of layers are relaxed.

1 11. (previously presented) The method according to
2 claim 1 wherein a plurality of layers to be strained are strained.

1 12. (currently amended) The method according to claim 1
2 wherein an epitaxial layer structure comprised of a plurality of
3 layers on ~~different~~ a substrate [[s]] is made in a single
4 deposition process.

1 13. (previously presented) The method according to
2 claim 1 wherein applied layers are thereafter removed.

1 14. (previously presented) The method according to
2 claim 1 wherein at least one strained layer is produced on a thin
3 relaxed layer.

1 15. (previously presented) The method according to
2 claim 1, further comprising the step of
3 removing a layer by means of hydrogen or helium
4 implantation.

1 16. (previously presented) The method according to
2 claim 1 wherein the defect region is used as a separating plane.

17. (canceled)

1 18. (previously presented) The method according to
2 claim 1 wherein for ion implantation, hydrogen ions or helium ions
3 are used.

1 19. (currently amended) The method according to claim
2 18 wherein ions with a dose of 3×10^{15} through $4 \times 10^{16} \text{ cm}^{-2}$ are
3 used for producing the defect region.

1 20. (previously presented) The method according to
2 claim 1 wherein Si ions are used for the implantation.

1 21. (currently amended) The method according to claim
2 [[1]] 20 wherein a dose of 1×10^{13} to $5 \times 10^{14} \text{ cm}^{-2}$ is used to
3 produce the defect region.

1 22. (previously presented) The method according to
2 claim 1 wherein for the implantation, hydrogen ions, carbon ions,
3 nitrogen ions, fluorine ions, boron ions, phosphorous ions, arsenic
4 ions, silicon ions, germanium ions, antimony ions, sulfur ions,
5 neon ions, argon ions, krypton ions or xenon ions or an ion type of
6 the layer material itself is used for producing the defect region.

1 23. (previously presented) The method according to
2 claim 1, further comprising the step of

3 effecting a relaxation over a limited region of at least
4 one layer.

1 24. (previously presented) The method according to
2 claim 1, further comprising the step of
3 arranging a mask on the layers.

1 25. (previously presented) The method according to
2 claim 1 wherein the one layer is relaxed only on the implanted
3 region or is stressed.

1 26. (previously presented) The method according to
2 claim 1 wherein the one layer is primarily irradiated with ions.

1 27. (previously presented) The method according to
2 claim 1 wherein hydrogen or helium is implanted to a considerable
3 depth and during a subsequent heat treatment, collects in a defect
4 region and thus enables separation.

1 28. (previously presented) The method according to
2 claim 27 wherein the dose for the hydrogen or helium implantation
3 can be reduced for the separation.

1 29. (currently amended) The method according to claim 1
2 wherein in the layers primarily crystal defects or in the substrate

3 proximal to the epitaxial layer an extended defect region is
4 produced.

1 30. (previously presented) The method according to
2 claim 1 wherein the energy of the implanted ions is so selected
3 that the mean range is greater than the total layer thickness of
4 the epitaxial layer.

1 31. (previously presented) The method according to
2 claim 1 wherein the thermal treatment is carried out in a
3 temperature range of 550 degrees C to 1200 degrees C.

1 32. (previously presented) The method according to
2 claim 1 wherein the thermal treatment is carried out in an inert,
3 reducing, nitriding or oxidizing atmosphere.

1 33. (previously presented) The method according to
2 claim 1 wherein the dislocation density after the growth amounts to
3 less than 10^5 cm^{-2} .

1 34. (currently amended) The method according to claim 1
2 wherein a strained layer or an unstrained layer with a surface
3 roughness of less than 1 nanometer ~~[[are]]~~ is produced.

1 35. (previously presented) The method according to
2 claim 1 wherein layers comprising silicon, silicon-germanium or
3 silicon-germanium-carbon or silicon carbide are deposited upon the
4 substrate.

1 36. (previously presented) The method according to
2 claim 1 wherein layers comprised of a III-V nitride, a II-VI
3 compound semiconductor or an oxidic perovskite is deposited on the
4 substrate.

1 37. (previously presented) The method according to
2 claim 1 wherein Si-Ge is used as the material for at least one of
3 the layers to be relaxed.

1 38. (previously presented) The method according to
2 claim 1 wherein two Si-Ge layers are relaxed.

1 39. (previously presented) The method according to
2 claim 1 wherein at least one layer with an additional carbon
3 content of one to two atomic percent is provided and is relaxed.

1 40. (previously presented) The method according to
2 claim 1 wherein an SOI substrate is used.

1 41. (previously presented) The method according to
2 claim 1 wherein an Si layer with a layer thickness below 200
3 nanometers is used.

1 42. (previously presented) The method according to
2 claim 1 wherein silicon, silicon germanium, silicon carbide,
3 sapphire or an oxidic perovskite or a III-V or II-VI compound
4 semiconductor is used as the substrate.

1 43. (previously presented) The method according to
2 claim 1 wherein a wafer bonding is carried out.

3 44. (previously presented) The method according to
4 claim 1 wherein the layers are bonded to a second substrate.

1 45. (currently amended) The method according to claim 1
2 wherein the layers are bonded to the substrate with an $[[MI]]$ SiO_2
3 layer.

1 46. (previously presented) The method according to
2 claim 1 wherein the substrate is removed.

1 47. (previously presented) The method according to
2 claim 1 wherein on a strained silicon region an n- or p- MOSFET is
3 produced.

1 48. (previously presented) The method according to
2 claim 1 wherein on at least a strained silicon germanium region as
3 a nonrelaxed region of a layer, a p- MOSFET is produced.

49 -- 60. (canceled)